

UNCLASSIFIED
EXHIBIT R-2, FY 2001 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5 **PROGRAM ELEMENT: 0604212N**
PROGRAM ELEMENT TITLE: ASW & Other Helo Development

(U) COST: (Dollars in Thousands)

| <u>Project Number & Title</u> | <u>FY 1999 Actuals</u> | <u>FY 2000 Budget</u> | <u>FY 2001 Estimate</u> | <u>FY 2002 Estimate</u> | <u>FY 2003 Estimate</u> | <u>FY 2004 Estimate</u> | <u>FY 2005 Estimate</u> | <u>To Complete</u> | <u>Total Program</u> |
|--|----------------------------|---------------------------|----------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------|--------------------------|
| H1109 CH/MH-53 | 1,534 | 3,987 | 466 | 2,334 | 2,949 | 2,909 | 3,031 | Cont | Cont |
| H1709 CH-60S Vertical Replenishment | 25,192 | 19,526** | 0 | 0 | 0 | 0 | 0 | 0 | 51,628 |
| H2415 CH-60S Development RDT&E Test Articles | 11,622 | 26,134**** | 13,177 | 15,519 | 6,303 | 5,797 | 5,308 | 0 | 113,554 |
| H2463, LAMPS MK III Data Link RDT&E Test Articles | 2,905* | 10,795*** | 10,750 | 25,254 | 0 | 0 | 0 | 0 | 49,704 |
| TOTAL | 41,253 | 60,442 | 24,393 | 43,107 | 9,252 | 8,706 | 8,339 | Cont | Cont |
| Quantity of RDT&E Articles | 0 | 0 | (Air) - 10 (Ship) - 6 | 0 | 0 | 0 | 0 | 0 | 1 |

Note:

* FY 99 actuals for H2463 includes a Congressional transfer of \$2.9M from the CEC program for the LAMPS MK III Data Link (executed under Project H2632).

** FY 00 budget for H1709 includes \$11,837 for Airborne Mine Counter Measure efforts.

*** FY 00 estimate for H2463 includes a Congressional add for Project H2774 in the amount of \$1M for Ship-Air Mission Systems Integration, which has been reduced by \$5K for Congressional Undistributed adjustments.

****FY 00 budget for H2415 reflects a \$10.0M Congressional Plus-up for AMCM EDM Development (executed under H2773), which was reduced by \$55K for an Across-the-Board Congressional Recision and a \$1M Congressional Add for Sentient Sensor feasibility effort (executed under H2772), which was reduced by \$6K for an Across-the-Board

Congressional Recision. Total Program in Project Unit H2415 includes \$29,694 for CH-60S development efforts

R-1 Item No. 82
UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2, FY 2001 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROGRAM ELEMENT TITLE: ASW & Other Helo Development

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

H1109 – From FY 1999 to FY 2005, RDT&E H-53E efforts commence to develop and qualify components to replace obsolete system components and incorporate supportability improvement modifications. The requirement will include identification of candidate architectures for the H-53E avionics suite. Modeling and simulation will be used to the maximum practical extent throughout this effort. In addition, a parallel effort will be required addressing component parts obsolescence, such as the VIR-31, AIC-14, AFCS, 10804 GYRO, etc. To satisfy the requirement, Manned Flight Simulator (MFS) will be utilized to develop, install and test internal modifications to existing H-53E legacy avionics systems. The modifications will eliminate obsolete and/or unavailable sub-components, while retaining the original basic system footprint and functionality. As part of this effort, a complete electromagnetic vulnerability (EMV) assessment will be required for the affected and/or modified systems. Also in FY 1999, the program conducted a Pin Bending Study in an effort to further investigate the theories regarding pin bending and its effect on fatigue folding at the tail pylon bulkhead area of the helicopter. In FY 2000, the Improved External Lifting Capability (IELD) effort will populate the dynamic component model at Naval Surface Warfare Center (NSWC) Carderock to examine the feasibility of carrying separate loads on the existing H-53E's three cargo hooks. Once modeled, a prototype system will be designed, fabricated and flown on an aircraft. Additionally, a load matrix will be developed during testing to document which loads are to be carried by selected hook configurations.

H1709 - The CH-60S Fleet Combat Support (HC) Helicopter provides the Navy with a combat logistics at sea capability which is vital to sustain the Navy's power projection forces by a comprehensive and responsive combat logistics force support system. The HC helicopter will also serve as the primary Search and Rescue (SAR) aircraft for the Amphibious Task Force (ATF), providing essential support to amphibious operations. Within the context of "From the Sea" and in support of the national military strategy, the HC helicopter provides the Navy with a capability to conduct and sustain littoral power projection and peace keeping/presence operations. The primary missions of the HC helicopter include day/night VERTREP operations, vertical onboard delivery, day/night amphibious SAR and airhead operations. Secondary missions include special warfare support; recovery of torpedoes, drones, unmanned aerial vehicles and unmanned undersea vehicles; noncombatant evacuation operations; aeromedical evacuation humanitarian assistance and disaster relief. Joint procurement and support strategies will be pursued to reduce costs and duplicative efforts. The CH-60S C4I equipment will be compatible with joint operations and NATO forces in support of multinational operations. Existing DoD and Navy support equipment is being used to the maximum extent possible. In the Congressionally-directed demonstration project, Sikorsky has built a prototype CH-60S as a proof-of-concept vehicle. This aircraft was used to conduct a flight demonstration, Integrated Test (IT), and Operational Assessment (OA), including sea trials.

H2415 - The mission of the Airborne Mine Counter Measures (AMCM) program is to design, develop, integrate and ensure the interoperability of five separate AMCM sensors into the CH-60S helicopter. The CH-60S Fleet Combat Support (HC) Helicopter provides the Navy with a combat logistics at sea capability that is vital to sustain the Navy's power projection forces by providing a comprehensive and responsive combat logistics force support system. The following is included in this effort: (1) Performance of a three phase tow demonstration to test the impact of various tow tensions on the CH-60S. The phased tow tests will provide dynamic component life analysis and human factor analysis to determine aircraft and personnel stress associated with the new mission for the CH-60S. (2) Design, develop, integrate and ensure the interoperability of an AMCM sensor interface console for the CH-60S capable of operating all five AMCM systems. The interface will use an open system architecture leveraging off the existing SH-60R console. (3) Integrate and ensure the interoperability of all five AMCM sensors into the CH-60S Common Cockpit. (4) Design, develop,

R-1 Item No. 82

UNCLASSIFIED

UNCLASSIFIED

integrate and ensure the interoperability of the five AMCM sensors with the CH-60S Automatic Flight Control Computer (AFCC). (5) Design, develop, and integrate the Carriage Stream Tow Recovery System (CSTRS) for the handling of sensors on the CH-60S.

R-1 Item No. 82
UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2, FY 2001 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROGRAM ELEMENT TITLE: ASW & Other Helo Development

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION (Continued):

H2463 - The Light Airborne Multi-Purpose System (LAMPS) MK III helicopter is deployed on Ticonderoga Class cruisers, and Spruance Class destroyers, and Oliver Hazard Perry Class frigates, and provides an all-weather capability for detection, classification, and localization of ships and submarines. LAMPS is an integrated ship-to-helicopter, computer-to-computer weapon system designed to increase and extend the effectiveness of the surface combatant in the performance of its mission. Currently the LAMPS helicopter is tied to its host surface ship via a C-Band bi-directional data link. This data link transfers FLIR, radar, Electronic Support Measures (ESM), Identification Friend or Foe (IFF), voice, tactical symbology, and acoustic information between the helicopter and ship making the helicopter an extension of the ships sensors and increasing the sensor horizon of the ship. The recent introduction of Cooperative Engagement Capability (CEC) into the fleet has created an Electro Magnetic Interference (EMI) problem because it operates within the same C-Band frequency spectrum as the data link. In some CEC operating modes, it completely masks the LAMPS data link resulting in loss of information exchange between the ship and helicopter. To resolve this EMI issue, the LAMPS data link is being moved from the C-Band frequency to the KU-Band. Funding supports development and delivery of 10 air and 6 surface test articles from two vendors in FY 01.

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H1109

PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT

PROJECT TITLE: CH/MH-53

(U) COST: (Dollars in Thousands)

| <u>Project Number & Title</u> | <u>FY 1999 Actual</u> | <u>FY 2000 Budget</u> | <u>FY 2001 Estimate</u> | <u>FY 2002 Estimate</u> | <u>FY 2003 Estimate</u> | <u>FY 2004 Estimate</u> | <u>FY 2005 Estimate</u> | <u>To Complete</u> | <u>Total Program</u> |
|-----------------------------------|---------------------------|---------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------|--------------------------|
| H1109 CH/MH-53 | 1,534 | 3,987 | 466 | 2,334 | 2,949 | 2,909 | 3,031 | Cont | Cont |
| TOTAL | 1,534 | 3,987 | 466 | 2,334 | 2,949 | 2,909 | 3,031 | Cont | Cont |

Quantity of RDT&E Articles

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: From FY 1999 to FY 2005, RDT&E H-53E efforts commence to develop and qualify components to replace obsolete system components and incorporate supportability improvement modifications. The requirement will include identification of candidate architectures for the H-53E avionics suite. Modeling and simulation will be used to the maximum practical extent throughout this effort. In addition, a parallel effort will be required addressing component parts obsolescence, such as the VIR-31, AIC-14, AFCS, 10804 GYRO, etc. To satisfy the requirement, Manned Flight Simulator (MFS) will be utilized to develop, install and test internal modifications to existing H-53E legacy avionics systems. The modifications will eliminate obsolete and/or unavailable sub-components, while retaining the original basic system footprint and functionality. As part of this effort, a complete electromagnetic vulnerability (EMV) assessment will be required for the affected and/or modified systems. Also in FY 1999, the program conducted a Pin Bending Study in an effort to further investigate the theories regarding pin bending and its effect on fatigue folding at the tail pylon bulkhead area of the helicopter. In FY 2000, the Improved External Lifting Capability (IELD) effort will populate the dynamic component model at Naval Surface Warfare Center (NSWC) Carderock to examine the feasibility of carrying separate loads on the existing H-53E's three cargo hooks. Once modeled, a prototype system will be designed, fabricated and flown on an aircraft. Additionally, a load matrix will be developed during testing to document which loads are to be carried by selected hook configurations.

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H1109

PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT

PROJECT TITLE: CH/MH-53

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1999 ACCOMPLISHMENTS:

- (U) (\$ 636) Continued H-53E Avionics Obsolescence/Updated Cockpit- Developed corrective actions to replace/modify selected obsolete platform equipment.
- (U) (\$ 191) Continued In-house travel and field activities funding to support program.
- (U) (\$ 460) Conducted Pin Bending Study. This included testing the true effects of pin bending and the resulting fatigue life on the folding bulkheads so the platform does not suffer an undue fatigue life penalty.
- (U) (\$ 30) Provided GFE support.
- (U) (\$ 217) Continued Repair of Repairable (ROR) funding to support avionics obsolescence on the H-53E.

2. FY 2000 PLAN:

- (U) (\$ 200) Continue In-house travel and field activities funding to support program.
- (U) (\$ 1,978) Provide funding to support IELD program. This includes dynamic structures modeling, system design, and prototype development. Flight testing to determine electro environmental effects and document load matrix configuration.
- (U) (\$ 150) Continue Modeling Fidelity and Data Correlation – Place final SLAP data into the U.S. model at Carderock.
- (U) (\$ 350) Conduct developmental testing to determine new cargo hook system configuration.
- (U) (\$ 535) Continue H-53E Avionics Obsolescence/Updated Cockpit- Exploring options (through study) for taking existing avionics and upgrading internal parts.
- (U) (\$ 574) Conduct Rotor Hub Quality Testing on new configuration to extend life of aircraft.
- (U) (\$ 200) Conduct Spindle Study – Reliability and maintainability study to extend the life of aircraft.

R-1 Item No. 82

UNCLASSIFIED

UNCLASSIFIED
EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H1109

PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT

PROJECT TITLE: CH/MH-53

3. FY 2001 PLAN:

- (U) (\$ 191) Continue In-house travel and field activities funding to support program.
- (U) (\$ 275) Continue H-53E Avionics Obsolescence/Updated Cockpit. This includes a cockpit study on the layout development, human factors of component layout and component commonality.

(U) B. PROGRAM CHANGE SUMMARY

| | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> |
|--|----------------|----------------|----------------|
| (U) FY 2000 President's Budget: | 2,775 | 4,009 | 472 |
| (U) Appropriated Value: | 2,828 | 4,009 | |
| (U) Adjustments from Pres Budget: | -1,241 | -22 | -6 |
| (U) FY 2001 PRESIDENT'S Budget Submit: | 1,534 | 3,987 | 466 |

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1999 net decrease of \$1,241 thousand reflects a decrease of \$1,233 thousand for reprioritization of requirements within the Navy and, a decrease of \$8 thousand for a Small Business Innovation Research assessment. The FY 2000 decrease reflects a \$22 thousand reduction for an Across-the-Board Congressional recision. The FY 2001 decrease reflects a \$3 thousand decrease for revised economic assumptions and a \$3 thousand decrease for reprioritization of requirements within the Navy.

(U) Schedule: The H-53E Pin Bending effort will investigate the pin bending phenomena and its effects. From this effort a clearer understanding of this phenomena will exist giving the PMA the opportunity to properly address the effect on the fatigue limited aircraft structures. The effort is scheduled 4Q/99 – 1Q/00. The H-53E Avionics Obsolescence/Updated Cockpit effort to develop and qualify components is scheduled for 3Q/99 - 4Q/01. The H-53E effort to develop an Improved External Lifting Device (IELD) is scheduled for 1Q-4Q/00. The H-53E effort to determine selected hook configuration is schedule for 2Q/00. The H-53E effort to extend the life of the rotor hub is schedule for 2Q/00. The H-53E Spindle Study is schedule for 3Q/00.

R-1 Item No. 82
UNCLASSIFIED

UNCLASSIFIED

(U) Technical: Not Applicable

EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N
PROGRAM ELEMENT TITLE: ASW & OTHER HELO DEVELOPMENT

PROJECT NUMBER: H1109
PROJECT TITLE: CH/MH-53

(U) C. OTHER PROGRAM FUNDING SUMMARY: Not Applicable

(U) D. ACQUISITION STRATEGY:

This is a non-ACAT program with no specific acquisition strategies.

(U) E. SCHEDULE PROFILE

| | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>To Complete</u> |
|----------------------------|---|---|---|---------------------------|
| (U) Program Milestones | 4Q/99 Pin Bending Progress Review | | | |
| (U) Engineering Milestones | 3Q/99-4Q/99 H-53E Develop & Qualify Components | 1Q/00-4Q/00 H-53E Develop & Qualify Components 2Q/00-3Q/00 IELD System Design 3Q/00-4Q/00 IELD Prototype Dev | 1Q/01-4Q/01 H-53E Develop & Qualify Components | 1Q/02-4Q/02 H-53E Develop |
| (U) T&E Milestone | 4Q/99 Pin Bending Test Readiness Review (TRR) | 3Q/00-4Q/00 IELD TESTFLT 2Q/00 Rotor Hub Quality Testing | | |
| (U) Contract Milestones | 4Q/99 Pin Bending | 1Q/00 Pin Bending Test Result Outbrief 2Q/00 Cargo Hook System 3Q/00 Spindle Study | | |

R-1 Item No. 82
UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

**DATE: February
2000**

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

**PROJECT NUMBER: H1109
PROJECT TITLE: CH/MH-53**

| <u>Cost Categories:</u> | <u>Contract Method & Type</u> | <u>Performing Activity & Location</u> | <u>Total Prior Yrs Cost</u> | <u>FY 1999 Cost</u> | <u>FY 1999 Award Date</u> | <u>FY 2000 Cost</u> | <u>FY 2000 Award Date</u> | <u>FY 2001 Cost</u> | <u>FY 2001 Award Date</u> | <u>Cost to Complete</u> | <u>Total Cost</u> | <u>Target Value of Contract</u> |
|---|-----------------------------------|---|-----------------------------|---------------------|---------------------------|---------------------|---------------------------|---------------------|---------------------------|-------------------------|-------------------|---------------------------------|
| CARGO HOOK SYSTEM | SS CPFF | SIKORSKY/CT | | | | 350 | 01/00 | | | | 350 | 350 |
| TECHNICAL SUPPORT | WX | NAWCAD Pax River, MD | 776 | | | | | | | 0 | 776 | |
| GFE SUPPORT | RX | NAWCAD Pax River, MD | | 30 | 5/99 | | | | | 0 | 30 | 30 |
| IELD | WX | ROTARY WING, Pax River, MD | | | | 1978 | 11/99 | | | | 1978 | |
| Subtotal Project Development | | | 776 | 30 | | 2328 | | 0 | | Cont | Cont | |
| Remarks | | | | | | | | | | | | |
| H-53E AVIONICS OBSOLESCENCE | WX | MFS/Pax River, MD | | 636 | 05/99 | 535 | 01/00 | | | 0 | 1171 | |
| MODELING FIDELITY & DATA CORRELATION | WX | NSWC CARDEROCK | | | | 150 | 05/00 | | | 0 | 150 | |
| H-53E AVIONICS OBSOLESCENCE | WX | NAVICP, Philadelphia, PA | | | | | | 275 | 11/00 | 200 | Cont | |
| SPINDLE STUDY | SS CPFF | SIKORSKY/CT | | | | 200 | 04/00 | | | 0 | 200 | 200 |
| PIN BENDING STUDY | SS CPFF | SIKORSKY/CT | | 460 | 07/99 | | | | | 0 | 460 | 460 |
| ROR SUPPORT | SS CPFF | SIKORSKY/CT | | 217 | 09/99 | | | | | 0 | 217 | 217 |
| Subtotal Support | | | | 1313 | | 885 | | 275 | | Cont | Cont | |
| Remarks | | | | | | | | | | | | |

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H1109
PROJECT TITLE: CH/MH-53

| Cost Categories: | Contract | Performing | Total | FY 1999 | | FY 2000 | | FY 2001 | | Target | | |
|---------------------------------------|--------------------------|--------------------------------|-----------------------|---------------------|-------------------|---------------------|-------------------|---------------------|-------------------|-------------------------|-------------------|--------------------------|
| | <u>Method & Type</u> | <u>Activity & Location</u> | <u>Prior Yrs Cost</u> | <u>FY 1999 Cost</u> | <u>Award Date</u> | <u>FY 2000 Cost</u> | <u>Award Date</u> | <u>FY 2001 Cost</u> | <u>Award Date</u> | <u>Cost to Complete</u> | <u>Total Cost</u> | <u>Value of Contract</u> |
| Rotor Hub Quality Testing | SS CPFF | Sikorsky/ CT | | | | 574 | 02/00 | | | | 574 | 574 |
| Subtotal Test & Evaluation | | | 0 | 0 | | 574 | | 0 | | 0 | 574 | |
| Remarks | | | | | | | | | | | | |
| PMA TRAVEL | WX | NAWCAD Pax River,MD | 380 | 191 | 11/98 | 200 | 11/99 | 191 | 11/00 | Cont | Cont | |
| Subtotal Management | | | 380 | 191 | | 200 | | 191 | | Cont | Cont | |
| Remarks | | | | | | | | | | | | |
| Total Cost | | | 1156 | 1534 | | 3987 | | 466 | | Cont | Cont | |

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-2, FY 2000/2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H1709

PROGRAM ELEMENT TITLE: ASW & Other Helo Development

PROJECT TITLE: CH-60S VERTREP

(U) COST: (Dollars in Thousands)

| <u>Project Number & Title</u> | <u>FY 1999 Actuals</u> | <u>FY 2000 Budget</u> | <u>FY 2001 Estimate</u> | <u>FY 2002 Estimate</u> | <u>FY 2003 Estimate</u> | <u>FY 2004 Estimate</u> | <u>FY 2005 Estimate</u> | <u>To Complete</u> | <u>Total Program</u> |
|-------------------------------------|----------------------------|---------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------|--------------------------|
| H1709 CH-60S Vertical Replenishment | 25,192 | 19,526* | 0 | 0 | 0 | 0 | 0 | 0 | 51,628 |
| TOTAL | 25,192 | 19,526 | 0 | 0 | 0 | 0 | 0 | 0 | 51,628 |

Quantity of RDT&E Articles

1

Notes:

*FY00 control includes \$11,837 for Airborne Mine Counter Measure efforts.

Total Program in Project Unit H2415 includes \$29,694 for CH-60S development efforts.

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The CH-60S Fleet Combat Support (HC) Helicopter provides the Navy with a combat logistics at sea capability which is vital to sustain the Navy's power projection forces by a comprehensive and responsive combat logistics force support system. The HC helicopter will also serve as the primary Search and Rescue (SAR) aircraft for the Amphibious Task Force (ATF), providing essential support to amphibious operations. Within the context of "From the Sea" and in support of the national military strategy, the HC helicopter provides the Navy with a capability to conduct and sustain littoral power projection and peace keeping/presence operations. The primary missions of the HC helicopter include day/night VERTREP operations, vertical onboard delivery, day/night amphibious SAR and airhead operations. Secondary missions include special warfare support; recovery of torpedoes, drones, unmanned aerial vehicles and unmanned undersea vehicles; noncombatant evacuation operations; aeromedical evacuation humanitarian assistance and disaster relief. Joint procurement and support strategies will be pursued to reduce costs and duplicative efforts. The CH-60S C4I equipment will be compatible with joint operations and NATO forces in support of multinational operations. Existing DoD and Navy support equipment is being used to the maximum extent possible. In the Congressionally-directed demonstration project, Sikorsky has built a prototype CH-60S as a proof-of-concept vehicle. This aircraft was used to conduct a flight demonstration, Integrated Test (IT), and Operational Assessment (OA), including sea trials.

R-1 Item No. 82

UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2, FY 2000/2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H1709

PROGRAM ELEMENT TITLE: ASW & Other Helo Development

PROJECT TITLE: CH-60S VERTREP

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1999 ACCOMPLISHMENTS AND PLANS:

- (U) (\$18,269) Continued developmental efforts on a production representative CH-60S helicopter. Supplies and services included engineering investigations and studies, non-recurring engineering (NRE) for production engineering, common cockpit analysis and integration studies, logistics support, and NRE documentation.
- (U) (\$4,369) Completed common cockpit developmental efforts and anticipated pre-operational test efforts.
- (U) (\$2,554) Continued Navy field activity systems engineering and test support, program management, and travel.

2. FY 2000 PLAN:

- (U) (\$6,823) Complete developmental efforts on a production representative CH-60 helicopter. Supplies and services include ground and flight tests, logistics support, NRE documentation, and engineering support for testing.
- (U) (\$4,741) Navy field activity program management and travel for CH-60 and Airborne Mine Counter Measures.
- (U) (\$6,067) Complete Airborne Mine Counter Measures Phase III Tow Test and provide Follow-on efforts to the Airborne Mine Countermeasure Program.
- (U) (\$1,895) Completing developmental efforts on a production representative CH-60S helicopter. Supplies and services included engineering investigations and studies, nonrecurring engineering and design, common cockpit analyses and integration studies.

4. FY 2001 PLAN: N/A

R-1 Item No. 82

UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2a, FY 2000/2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H1709

PROGRAM ELEMENT TITLE: ASW & Other Helo Development

PROJECT TITLE: CH-60S VERTREP

(U) B. PROGRAM CHANGE SUMMARY

| | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY2001</u> |
|--|----------------|----------------|---------------|
| (U) FY 2000 President's Budget: | 25,940 | 19,634 | 0 |
| (U) Appropriated Value: | 12,775 | 19,634 | |
| (U) Adjustments from President's Budget: | -748 | -108 | 0 |
| (U) FY 2001 DON Budget Submit: | 25,192 | 19,526 | 0 |

CHANGE SUMMARY EXPLANATION:

(U) Funding –The FY 1999 net decrease of \$748 thousand reflects a \$118 thousand reduction for Inflation Savings, a \$1,098 thousand reduction for Small Business Innovation Research assessments, and an increase of \$468 thousand for Military and Civilian Pay. The FY 2000 decrease reflects a \$108 thousand reduction for an Across the Board Congressional Rescission.

(U) Schedule – Complete Phase III Tow Demo was added to 4Q of FY 2000. The FY 2000 information for CH-60S is in accordance with the definitized schedule.

(U) Technical - None.

(U) C. OTHER PROGRAM FUNDING SUMMARY

| <u>Appn</u> | <u>FY 1999</u> <u>Actuals</u> | <u>FY 2000</u> <u>Budget</u> | <u>FY 2001</u> <u>Estimate</u> | <u>FY 2002</u> <u>Estimate</u> | <u>FY 2003</u> <u>Estimate</u> | <u>FY 2004</u> <u>Estimate</u> | <u>FY 2005</u> <u>Estimate</u> | <u>To</u> <u>Complete</u> |
|---|----------------------------------|---------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|------------------------------|
| APN-2 | 135,331 | 357,455 | 245,482 | 254,843 | 395,429 | 408,470 | 332,531 | 1,968,609 |
| APN-6 | 3,287 | 8,750 | 11,979 | 11,358 | 571 | 485 | 454 | 3,334 |
| <u>Related RDT&E -</u> (U) P.E. Project Number H2415 | 11,622 | 26,134 | 13,177 | 15,519 | 6,303 | 5,797 | 5,308 | Cont |

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-2a, FY 2000/2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H1709

PROGRAM ELEMENT TITLE: ASW & Other Helo Development

PROJECT TITLE: CH-60S VERTREP

(U) C. ACQUISITION STRATEGY:

Following the demonstration program, the Navy awarded a contract with Sikorsky to continue non-recurring efforts. An Acquisition Plan and J&A has been approved for this procurement. The contract was awarded in July 1998. The Army will negotiate and incorporate via the "Changes Clause" the CH-60S production ECP into the UH-60L multi-year contract. The production ECP will be incorporated into the multi-year contract in February 2000.

(U) D. SCHEDULE PROFILE

| | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>TO</u> |
|----------------------------|--|---|-------------------------------|-------------------------------|
| <u>COMPLETE</u> | | | | |
| (U) Program Milestones | | | 2Q/01 MSIII | |
| (U) Engineering Milestones | | | | 1Q/03 – 3Q/04 CSAR |
| (U) T&E Milestones | | 1Q/00 - 3Q/00 CT/DT-IIA | 1Q/01-2Q/01OPEVAL (OT-IIB) | |
| | | 3Q/00-4Q/00 TECHEVAL | | 3Q/04 – 2Q/05 DT/IIIA CSAR |
| | | 4Q/00 - 2Q/01 OT-IIB | | 2Q/05 – 4Q/05 OT/IIIB CSAR |
| (U) Contract Milestones | 4Q/99 Funds to Army Multi-Year Contract LOT I/LRIP | 4Q/00 Complete Phase III Tow Demo for AMCM | | |

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

DATE: Feb-00

BUDGET ACTIVITY: 5

**PROGRAM ELEMENT: 0604212N
PROJECT TITLE: ASW & Other Helo Development**

PROJECT NUMBER: H1709

| Cost Categories: | Contract Method & Type | Performing Activity & Location | Total Prior Yrs Cost | FY 1999 | | FY 2000 | | FY 2001 | | Cost to Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|----------------------|---------------|------------|--------------|------------|--------------|------------|------------------|---------------|--------------------------|
| | | | | FY 1999 Cost | Award Date | FY 2000 Cost | Award Date | FY 2001 Cost | Award Date | | | |
| CH-60S Prototype Development | SS/FFP | Sikorsky, Stratford, CT | 5,749 | 0 | N/A | 0 | N/A | 0 | N/A | 0 | 5,749 | 5,749 |
| Non-Recurring Engineering | SS/CPFF | Sikorsky, Stratford, CT | 0 | 18,269 | Jun-99 | 6,823 | Mar-00 | 0 | N/A | 0 | 25,092 | 25,092 |
| COTS Avionics Technology/H-60 Common Cockpit | 845 O/T | Lockheed Martin, Owego, NY | 0 | 4,369 | Jul-99 | 1,895 | N/A | 0 | N/A | 0 | 6,264 | 6,264 |
| Misc. In-House Engineering and Logistics | Various | Various | 0 | 0 | N/A | 826 | N/A | 0 | N/A | 0 | 826 | |
| Subtotal Product Development | | | 5,749 | 22,638 | | 9,544 | | 0 | | 0 | 37,931 | |
| Misc. In-House Engineering and Logistics | Various | Various | 50 | 299 | N/A | 0 | N/A | 0 | N/A | 0 | 349 | |
| Engineering, Studies, and Tech Support | Various | NAWCAD Patuxent River, MD | 0 | 179 | Nov-98 | 0 | N/A | 0 | N/A | 0 | 179 | |
| Subtotal Support | | | 50 | 478 | | 0 | | 0 | | 0 | 528 | |

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

DATE: Feb-00

BUDGET ACTIVITY: 5

**PROGRAM ELEMENT: 0604212N
PROJECT TITLE: ASW & Other Helo Development**

PROJECT NUMBER: H1709

| Cost Categories: | Contract Method & Type | Performing Activity & Location | Total | FY 1999 | | FY 2000 | | FY 2001 | | Cost to Complete | Total Cost | Target Value of Contract |
|---------------------------------------|------------------------|--------------------------------|----------------|---------------|------------|---------------|------------|--------------|------------|------------------|---------------|--------------------------|
| | | | Prior Yrs Cost | FY 1999 Cost | Award Date | FY 2000 Cost | Award Date | FY 2001 Cost | Award Date | | | |
| Misc. Test & Evaluations | Various | Various | 12 | 70 | Nov-98 | 0 | N/A | 0 | N/A | 0 | 82 | |
| Test & Evaluations Engineering | Various | NAWCAD Patuxent River, MD | 0 | 1,928 | Nov-98 | 0 | N/A | 0 | N/A | 0 | 1,928 | |
| AMCM Phase III Tow Test | SS/FFP | Sikorsky, Stratford, CT | 0 | 0 | N/A | 6,067 | Mar-00 | 0 | N/A | 0 | 6,067 | 6,067 |
| Subtotal Test & Evaluation | | | 12 | 1,998 | | 6,067 | | 0 | | 0 | 8,077 | |
| Misc. Management Support | Various | Various | 36 | 78 | Nov-98 | 3,915 | Nov-99 | 0 | N/A | 0 | 4,029 | |
| Engineering Support | Various | NAWCAD Patuxent River, MD | 1,063 | 0 | N/A | 0 | N/A | 0 | N/A | 0 | 1,063 | |
| Subtotal Management | | | 1,099 | 78 | | 3,915 | | 0 | | 0 | 5,092 | |
| Remarks | | | | | | | | | | | | |
| Total Cost | | | 6,910 | 25,192 | | 19,526 | | 0 | | 0 | 51,628 | |

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-2, FY 2000/2001 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H2415

PROGRAM ELEMENT TITLE: ASW & Other Helo Development

PROJECT TITLE: CH-60S Development

(U) COST: (Dollars in Thousands)

| <u>Project Number & Title</u> | <u>FY 1999 Actuals</u> | <u>FY 2000 Budget</u> | <u>FY 2001 Estimate</u> | <u>FY 2002 Estimate</u> | <u>FY 2003 Estimate</u> | <u>FY 2004 Estimate</u> | <u>FY 2005 Estimate</u> | <u>To Complete</u> | <u>Total Program</u> |
|---------------------------------------|----------------------------|---------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------|--------------------------|
| H2415 CH-60S Development | 11,622 | 26,134* | 13,177 | 15,519 | 6,303 | 5,797 | 5,308 | 0 | 113,554 |
| TOTAL | 11,622 | 26,134 | 13,177 | 15,519 | 6,303 | 5,797 | 5,308 | 0 | 113,554 |
| Quantity of RDT&E Articles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Note: * FY 00 budget reflects a \$10.0M Congressional Plus-up for AMCM EDM Development, which was reduced by \$55K to plus up and \$84K to core for Across the Board Reduction. FY 00 budget reflects a \$1M Congressional Add for Sentient Sensor feasibility effort executed under H2772, which was reduced by \$6K for Across the Board Congressional Rescission.

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The mission of the Airborne Mine Counter Measures (AMCM) program is to design, develop, integrate and ensure the interoperability of five separate AMCM sensors into the CH-60S helicopter. The CH-60S Fleet Combat Support (HC) Helicopter provides the Navy with a combat logistics at sea capability that is vital to sustain the Navy's power projection forces by providing a comprehensive and responsive combat logistics force support system. The following is included in this effort: (1) Performance of a three phase tow demonstration to test the impact of various tow tensions on the CH-60S. The phased tow tests will provide dynamic component life analysis and human factor analysis to determine aircraft and personnel stress associated with the new mission for the CH-60S. (2) Design, develop, integrate and ensure the interoperability of an AMCM sensor interface console for the CH-60S capable of operating all five AMCM systems. The interface will use an open system architecture leveraging off the existing SH-60R console. (3) Integrate and ensure the interoperability of all five AMCM sensors into the CH-60S Common Cockpit. (4) Design, develop, integrate and ensure the interoperability of the five AMCM sensors with the CH-60S Automatic Flight Control Computer (AFCC). (5) Design, develop, and integrate the Carriage Stream Tow Recovery System (CSTRS) for the handling of sensors on the CH-60S.

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-2a, FY 2000/2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H2415

PROGRAM ELEMENT TITLE: ASW & Other Helo Development

PROJECT TITLE: CH-60S Development

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1999 ACCOMPLISHMENTS:

- (U) (\$5,066) Performed engineering analysis to support Phase I and Phase II Tow Test Demonstration. Developed test plans, instrumentation packages, and data reduction and analysis to support tow demonstration. Provided pilot training logistic support for Phase I of Tow Test Demo, and completed Phase I of Tow Test Demo.
- (U) (\$1,000) Continued developmental efforts on a production representative CH-60S helicopter. Supplies and services included engineering investigations and studies, nonrecurring engineering and design, common cockpit analyses and integration studies, logistics support, and nonrecurring engineering documentation.
- (U) (\$1,171) Performed engineering efforts including development of the Carriage Stream Tow Recovery System (CSTRS) for all five AMCM sensors. Met an emergent Organic AMCM requirement.
- (U) (\$1,450) Performed integration analysis of five AMCM sensors into the SH-60R mission system architecture.
- (U) (\$2,935) Continued Navy field activity systems engineering and test support, program management, and travel.

2. FY 2000 PLAN:

- (U) (\$6,290) Continued developmental efforts on a production representative CH-60S helicopter. Supplies and services included engineering investigations, nonrecurring engineering and design. Carriage Stream Tow & Recovery (CSTRS) analysis and integration, logistics support, and nonrecurring engineering documentation. Continued development of the prototype console, as well as software modifications, for all five AMCM sensors and palletized system to insure total system interoperability in the CH-60S. Complete Phase II Tow Test Demo.
- (U) (\$6,861) Procured engineering, design and development for two Carriage Stream Tow & Recovery System (CSTRS) prototypes and unique requirement definition, for all five AMCM sensors.
- (U) (\$3,800) Designed, developed, integrated and supported the interoperability of a Common AMCM Sensor Console and Automatic Flight Control Computer for the CH-60S helicopter.
- (U) (\$2,000) Continued testing and engineering efforts to integrate the Carriage Stream Tow Recovery System (CSTRS) for all five AMCM sensors into the CH-60S. Phase III Tow Test funded under H1709.

R-1 Item No. 82
UNCLASSIFIED

UNCLASSIFIED

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-2a, FY 2000/2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H2415

PROGRAM ELEMENT TITLE: ASW & Other Helo Development

PROJECT TITLE: CH-60S Development

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

2. FY 2000 PLAN (Cont):

- (U) (\$6,189) Continued Navy field activity systems engineering and test support, program management, and travel.
- (U) (\$994) Proceed with a Phase III effort to demonstrate the feasibility of use of Sentient Sensors which will allow real time monitoring and analysis of the state of aircraft wire bundles.
- (U) Note: Project H1709 funds of \$11,873 for Airborne Mine Counter Measure Phase III Tow Test efforts.

3. FY 2001 PLAN:

- (U) (\$6,947) Continue integration analysis and nonrecurring engineering effort supporting the development and integration of the interoperability of the Airborne Mine Counter Measures (AMCM) system into the CH-60S helicopter. Commence integration of design changes into the Common Console and Common Cockpit.
- (U) (\$3,930) Continue the design, development, integration and support of the interoperability of a Common AMCM Sensor Console for the CH-60S. Design, develop, integrate and support the interoperability of Automatic Flight Control Computer (AFCC). Complete AFCC design and integration into Common Console.
- (U) (\$2,300) Continue Navy field activity systems engineering and test support, program management, and travel.

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-2a, FY 2000/2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H2415

PROGRAM ELEMENT TITLE: ASW & Other Helo Development

PROJECT TITLE: CH-60S Development

(U) B. PROGRAM CHANGE SUMMARY

| | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> |
|--|----------------|----------------|----------------|
| (U) FY 2000 President's Budget: | 11,972 | 15,279 | 13,287 |
| (U) Appropriated Value: | 12,000 | 15,279 | |
| (U) Adjustments from Pres Budget: | -350 | +10,855 | -110 |
| (U) FY 2001 President's Budget Submit: | 11,622 | 26,134 | 13,177 |

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1999 net decrease of \$350 thousand reflects a reduction of \$296 thousand for Small Business Innovation Research (SBIR) assessment and a decrease of \$54 thousand for Inflation savings. FY 2000 net increase of \$10,855 thousand reflects an increase of \$10M for a Congressional Plus Up for CSTRS prototypes and a decrease of \$139 thousand for an Across-the Board Congressional rescission. FY01 net decrease of \$110 thousand reflects a \$90 thousand decrease for revised economic assumptions, an increase of \$6 thousand for Military and Civilian Pay, a decrease of \$35 thousand for reprioritization of requirements within the Navy, and an increase of \$9 thousand for Strategic Sourcing Plan initiatives and NWCF rate adjustments.

(U) Schedule: Phase II Tow Test will be completed in 2nd Qtr 00 due to addition of strain gauge testing of YCH-60 prior to inflight tow test. Strain gauge testing is necessary to validate tow point design and cable release checks prior to flight. In addition, the strain gauge testing will enable prediction representative engineering drawings by LRIP Lot II on CH-60S helicopters.

(U) Technical: N/A

(U) C. OTHER PROGRAM FUNDING SUMMARY

| <u>Appn</u> | <u>FY 1999</u> <u>Actuals</u> | <u>FY 2000</u> <u>Budget</u> | <u>FY 2001</u> <u>Estimate</u> | <u>FY 2002</u> <u>Estimate</u> | <u>FY 2003</u> <u>Estimate</u> | <u>FY 2004</u> <u>Estimate</u> | <u>FY 2005</u> <u>Estimate</u> | <u>To</u> <u>Complete</u> |
|-------------|----------------------------------|---------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|------------------------------|
| APN-2 | 135,331 | 357,455 | 245,482 | 254,843 | 395,429 | 408,470 | 332,531 | 1,965,524 |

Related RDT&E

| | |
|--------------------------|--------|
| (U) P.E. 0604212N, H1709 | 11,873 |
| (U) P.E. 0604212N, H2772 | 994 |

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-2a, FY 2000/2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H2415

PROGRAM ELEMENT TITLE: ASW & Other Helo Development

PROJECT TITLE: CH-60S Development

(U) C. ACQUISITION STRATEGY: Contract award for Prime Systems Integration planned for 2nd Quarter 00.

(U) D. SCHEDULE PROFILE

| | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>TO COMPLETE</u> |
|----------------------------|--|--|---|--|
| (U) Program Milestones | | | 2Q/01 CH-60 MSIII | |
| (U) Engineering Milestones | | | 3Q/01 Complete AFCC Design/Integration | 1Q/03-3Q-04 CC/CSAR |
| (U) T&E Milestones | 4Q/99 Completed Phase I Tow Demo | 2Q/00 Complete Phase II Tow Demo 4Q/00 Complete Phase III Tow Demo 1Q/00-3Q/00 CT/DT-IIA 3Q/00-4Q/00 TECHEVAL 4Q/00-2Q/00 OT-IIB 1Q/00-2Q/00 Initiate 1 st Flight Integrated Test | 1Q/01-2Q-01 OPEVAL (OT-IIB) | 3Q/04-2Q-05 DT-IIIA CSAR 2Q/05-4Q/05 OT-IIIB CSAR |
| (U) Contract Milestones | 4Q/99 CH-60 Multi-year contract LOT I/LRIP | | | |

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

DATE: Feb-00

BUDGET ACTIVITY: 5

**PROGRAM ELEMENT: 0604212N
PROJECT TITLE: ASW & Other Helo Development**

PROJECT NUMBER: H2415

| Cost Categories: | Contract Method & Type | Performing Activity & Location | Total Prior Yrs Cost | FY 1999 | | FY 2000 | | FY 2001 | | Cost to Complete | Total Cost | Target Value of Contract |
|--|------------------------|-------------------------------------|----------------------|--------------|--------------------|---------------|--------------------|--------------|--------------------|------------------|---------------|--------------------------|
| | | | | FY 1999 Cost | FY 1999 Award Date | FY 2000 Cost | FY 2000 Award Date | FY 2001 Cost | FY 2001 Award Date | | | |
| AMCM NRE & Tow Demo/AFCC Common Console Development | SS/CPFF | Sikorsky, Stratford, CT | 0 | 5,066 | Feb-99 | 3,800 | Mar-00 | 3,547 | Nov-00 | 13,193 | 25,606 | 25,606 |
| Common Cockpit Development | 845OT | Lockheed Martin, Owego, NY | 6,334 | 1,000 | Apr-99 | 0 | N/A | 0 | N/A | 0 | 7,334 | 7,334 |
| Carriage Stream & Recovery System | SS/FFP | Concurrent Tech, Jamestown, PA | 0 | 1,171 | Apr-99 | 6,861 | Feb-00 | 0 | N/A | 0 | 8,032 | 8,032 |
| AMCM System Integration & Analysis | SS/CPFF | Lockheed Martin, Owego, NY | 0 | 1,450 | Aug-99 | 6,290 | Mar-00 | 5,500 | Nov-00 | 11,253 | 24,493 | 24,493 |
| Carriage Stream & Recovery System Testing & Evaluation | SS/CPFF | Sikorsky, Stratford, CT | 0 | 0 | N/A | 2,000 | Mar-00 | 0 | N/A | 0 | 2,000 | 2,000 |
| CH-60S NRE | SS/CPFF | Sikorsky, Stratford, CT | 16,107 | 0 | N/A | 0 | N/A | 0 | N/A | 0 | 16,107 | 16,107 |
| Sentient Sensor Feasibility | SS/CPFF | Management Sciences Albuquerque, NM | 0 | 0 | N/A | 994 | Mar-00 | 0 | N/A | 0 | 994 | 994 |
| Subtotal Product Development | | | 22,441 | 8,687 | | 19,945 | | 9,047 | | 24,446 | 84,566 | |
| Misc. In-House Engineering and Logistics | WX | NSWC, Coastal System Station | 2,337 | 1,799 | N/A | 2,166 | N/A | 1,100 | N/A | 3,911 | 11,313 | |
| Engineering, Studies, Tech Support | Various | NAWCAD Patuxent River, MD | 1,687 | 0 | N/A | 0 | N/A | 0 | N/A | 0 | 1,687 | |
| Subtotal Support | | | 4,024 | 1,799 | | 2,166 | | 1,100 | | 3,911 | 13,000 | |

Remarks:

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED
EXHIBIT R-3, FY 2001 RDT&E,N COST
ANALYSIS

DATE: Feb-00

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N
 PROJECT TITLE: ASW & Other Helo Development

PROJECT NUMBER: H2415

| Cost Categories: | Contract Method & Type | Performing Activity & Location | Total | FY 1999 | | FY 2000 | | FY 2001 | | Cost to Complete | Total Cost | Target Value of Contract |
|---------------------------------------|------------------------|--------------------------------|----------------|---------------|------------|---------------|------------|---------------|------------|------------------|----------------|--------------------------|
| | | | Prior Yrs Cost | FY 1999 Cost | Award Date | FY 2000 Cost | Award Date | FY 2001 Cost | Award Date | | | |
| AMCM Test & Evaluations Engineering | WX | NAWCAD Patuxent River, MD | 0 | 733 | N/A | 2,318 | N/A | 1,480 | N/A | 2,553 | 7,084 | |
| Misc. Test & Evaluations | Various | NAWCAD Patuxent River, MD | 634 | 0 | N/A | 0 | N/A | 0 | N/A | 0 | 634 | |
| Test & Evaluations Engineering | Various | NAWCAD Patuxent River, MD | 900 | 0 | N/A | 0 | N/A | 0 | N/A | 0 | 900 | |
| Subtotal Test & Evaluation | | | 1,534 | 733 | | 2,318 | | 1,480 | | 2,553 | 8,618 | |
| AMCM Misc. Management Support | Various | Various | 0 | 56 | N/A | 298 | N/A | 50 | N/A | 152 | 556 | |
| Misc. Management Support | Various | NAVAIR Patuxent River, MD | 1,090 | 347 | N/A | 1,407 | N/A | 1,500 | N/A | 1,865 | 6,209 | 6,209 |
| Engineering Support | Various | NAWCAD Patuxent River, MD | 605 | 0 | N/A | 0 | N/A | 0 | N/A | 0 | 605 | |
| Subtotal Management | | | 1,695 | 403 | | 1,705 | | 1,550 | | 2,017 | 7,370 | |
| Total Cost | | | 29,694 | 11,622 | | 26,134 | | 13,177 | | 32,927 | 113,554 | |

R-1 Item No. 82
UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2a, FY 001 RDT&E, N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H2463

PROGRAM ELEMENT TITLE: ASW & Other Helo Development

PROJECT TITLE: LAMPS MK III DATALINK

(U) COST: (Dollars in Thousands)

| <u>Project Number & Title</u> | <u>FY 1999*</u> <u>Actual</u> | <u>FY 2000**</u> <u>Budget</u> | <u>FY 2001</u> <u>Estimate</u> | <u>FY 2002</u> <u>Estimate</u> | <u>FY 2003</u> <u>Estimate</u> | <u>FY 2004</u> <u>Estimate</u> | <u>FY 2005</u> <u>Estimate</u> | <u>To</u> <u>Complete</u> | <u>Total</u> <u>Program</u> |
|-----------------------------------|----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|------------------------------|--------------------------------|
| H2463, LAMPS MK III Data Link | 2,905 | | 10,795 | 10,750 | 25,254 | 0 | | 0 | 0 |
| TOTAL | 2,905 | 10,795 | 10,750 | 25,254 | 0 | 0 | 0 | 0 | 49,704 |

Quantity of RDT&E Articles: (Air) - 10
(Ship) - 6

*FY 1999 actual includes a Congressional transfer of \$2.9M from the CEC program for the LAMPS MK III Data Link under Project H2632.

**FY 2000 budget for H2463 includes a Congressional add for Project H2774 in the amount of \$1M for Ship-Air Mission Systems Integration, which has been reduced by \$5K for Congressional Undistributed adjustments.

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Light Airborne Multi-Purpose System (LAMPS) MK III helicopter is deployed on Ticonderoga Class cruisers, and Spruance Class destroyers, and Oliver Hazard Perry Class frigates, and provides an all-weather capability for detection, classification, and localization of ships and submarines. LAMPS is an integrated ship-to-helicopter, computer-to-computer weapon system designed to increase and extend the effectiveness of the surface combatant in the performance of its mission. Currently the LAMPS helicopter is tied to its host surface ship via a C-Band bi-directional data link. This data link transfers FLIR, radar, Electronic Support Measures (ESM), Identification Friend or Foe (IFF), voice, tactical symbology, and acoustic information between the helicopter and ship making the helicopter an extension of the ships sensors and increasing the sensor horizon of the ship. The recent introduction of Cooperative Engagement Capability (CEC) into the fleet has created an Electro Magnetic Interference (EMI) problem because it operates within the same C-Band frequency spectrum as the data link. In some CEC operating modes, it completely masks the LAMPS data link resulting in loss of information exchange between the ship and helicopter. To resolve this EMI issue, the LAMPS data link is being moved from the C-Band frequency to the KU-Band. Funding supports development and delivery of 10 air and 6 surface test articles from two vendors in FY 01.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1999 ACCOMPLISHMENTS:

- (U) (\$1,550) Nonrecurring Engineering (NRE) for Tactical Common Data Link (TCDL) design. Exercised Defense Advanced Research Projects Agency (DARPA) option for two vendors to develop TCDL prototypes for LAMPS.
- (U) (\$488) Developed KU-Band TCDL specifications and initiate effort to integrate KU-Band in Ship/Helo LAMPS Network. Identify changes

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

in SH-60R and SH-60B Prime Item Development Specification and System Segment Specification to incorporate TCDL.
EXHIBIT R-2a, FY 2001 RDT&E, N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H2463

PROGRAM ELEMENT TITLE: ASW & Other Helo Development

PROJECT TITLE: LAMPS MK III Data Link

- (U) (\$611) Technical services to evaluate vendor proposals and participate in PDR.
- (U) (\$65) Management Support Services, Contract Fees, and Travel.
- (U) (\$191) Field Activity engineering and technical support for TCDL design and integration effort.

2. FY 2000 PLAN:

- (U) (\$7,500) Non-recurring Engineering (NRE) to continue development of Tactical Common Data Link (TCDL) via DARPA contract. Perform In-Process Review (IPR).
- (U) (\$946) Develop Engineering Change Proposal (ECP) to integrate TCDL onto LAMPS air and ship segments.
- (U) (\$550) Technical services to review and evaluate vendor progress. Participate in IPR and CDR.
- (U) (\$60) Program Management and travel.
- (U) (\$744) Field Activity, Test, Engineering and Technical Support.
- (U) (\$995) Ship-Air Mission Systems Integration.

3. FY 2001 PLAN:

- (U) (\$7,700) Continuing NRE, manufacturing, and development effort by both vendors.
- (U) (\$900) Continuing integration of TCDL on LAMPS Air and Ship segments, conduct Contractor Lab Testing, and start Request for Proposal (RFP) to select vendor for production.
- (U) (\$440) Technical services to review and evaluate vendor progress.
- (U) (\$58) Program Management and travel.
- (U) (\$1,392) Flight Testing, Development/Operational Test and Evaluation (DT/OT) of airborne and surface segments, environmental, and reliability testing.
- (U) (\$260) Field Activity Engineering, and Technical Support.

R-1 Item No. 82

UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2a, FY 2001 RDT&E, N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H2463

PROGRAM ELEMENT TITLE: ASW & Other Helo Development

PROJECT TITLE: LAMPS MK III Data Link

(U) B. PROGRAM CHANGE SUMMARY

| | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> |
|--|----------------|----------------|----------------|
| (U) FY 2000 President's Budget: | 2,993 | 9,854 | 10,852 |
| (U) Appropriated Value: | 3,000 | 9,854 | |
| (U) Adjustments from President's Budget: | -88 | 941 | -102 |
| (U) FY 2001 President's Budget Submit: | 2,905 | 10,795 | 10,750 |

CHANGE SUMMARY EXPLANATION: N/A

(U) Funding:

The FY 1999 decrease reflects a \$74 thousand decrease for SBIR Assessment, and a \$14 thousand decrease for Inflation Savings.

The FY 2000 increase reflects a \$941 thousand increase for Ship-Air Mission Systems Integration.

The FY 2001 decrease reflects a \$102 thousand decrease for revised economic assumptions.

(U) Schedule: CDR delayed one quarter due to Air Force requirement to include Asynchronous Transfer Mode into the Tactical Common Data Link (TCDL).

(U) Technical: N/A

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-2a, FY 2001 RDT&E, N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H2463

PROGRAM ELEMENT TITLE: ASW & Other Helo Development

PROJECT TITLE: LAMPS MK III Data Link

(U) C. OTHER PROGRAM FUNDING SUMMARY

| <u>Appn</u> | <u>FY 1998</u> | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>FY 2002</u> | <u>FY 2003</u> | <u>FY 2004</u> | <u>FY 2005</u> | <u>To</u> | <u>Total</u> |
|-------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|
| <u>OPN</u> | <u>Actual</u> | <u>Budget</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u> | <u>Complete</u> | <u>Program</u> |
| | 0 | 0 | 0 | 0 | 0 | 5,673 | 28,726 | 38,229 | 0 | 72,628 |

(U) D. ACQUISITION STRATEGY: PMA-299 is exercising an option on a DARPA contract for two vendors to develop a TCDL solution for LAMPS. Upon completion, two vendors will be qualified to compete on a Lockheed Martin Federal Systems (LMFS) proposal to provide TCDL production data links to LAMPS air and ship segments. Lockheed Martin will run the competition to down select and will integrate the TCDL KU-Band Data Link into the LAMPS MK III weapons system; aircraft and ships. Production will follow beginning in FY 2003.

(U) E. SCHEDULE PROFILE

| | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>TO COMPLETE</u> |
|----------------------------|----------------------------------|----------------------------|---------------------------|---|
| (U) Program Milestones | | | | |
| (U) Engineering Milestones | (4Q/99) PDR | (2Q/00) CDR (3Q/00) IPR | | |
| (U) T&E Milestones | | | (3Q/01) DT/OT | |
| (U) Contract Milestones | (3Q/99) Exercise DARPA Option | | (1Q/01) Pre-Prod Delivery | (4Q/02) RFP For FY 03 Contract Award |

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

DATE: February
2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H2463

PROJECT TITLE: LAMPS MK III Data Link

| <u>Cost Categories:</u> | <u>Contract Method & Type</u> | <u>Performing Activity & Location</u> | <u>Total Prior Yrs Cost</u> | <u>FY 1999 Cost</u> | <u>FY 1999 Award Date</u> | <u>FY 2000 Cost</u> | <u>FY 2000 Award Date</u> | <u>FY 2001 Cost</u> | <u>FY 2001 Award Date</u> | <u>Cost to Complete</u> | <u>Total Cost</u> | <u>Target Value of Contract</u> |
|--------------------------------------|-----------------------------------|---|-----------------------------|---------------------|---------------------------|---------------------|---------------------------|---------------------|---------------------------|-------------------------|-------------------|---------------------------------|
| Engineering Analysis & Studies | SS/BOA | LM-Owego NY | 0 | 484 | Jul 99 | 896 | Feb 00 | 0 | N/A | 0 | 1,380 | 1,380 |
| Hardware and Software Development | SS/TBD | LM-Owego, NY | 0 | 0 | N/A | 0 | N/A | 900 | Nov 00 | 7,152 | 8,052 | 8,052 |
| Hardware and Software Development | 845/845OT | Harris Corp Hazeltine Melbourne, FL | 0 | 750 | Jun 99 | 3,750 | Jan 00 | 3,800 | Nov 00 | 8,000 | 16,300 | 16,300 |
| | 845/845OT | L-3 Communication Salt Lake City, UT | | 750 | Jun 99 | 3,750 | Feb 00 | 3,800 | Nov 00 | 8,000 | 16,300 | 16,300 |
| Ship Air Mission Systems Integration | SS/BOA | LM-Owego, NY | 0 | 0 | N/A | 995 | May 00 | 0 | N/A | 0 | 995 | 995 |
| Subtotal Product Development | | | 0 | 1,984 | | 9,391 | | 8,500 | | 23,152 | 43,027 | 43,027 |
| Remarks: | | | | | | | | | | | | |
| Product Development Support | MIPR | DARPA, Arlington, VA | 0 | 50 | Feb 99 | 0 | N/A | 0 | N/A | 0 | 50 | 50 |
| Subtotal Support Costs | | | 0 | 50 | | 0 | | 0 | | 0 | 50 | 50 |

**R-1 Item No. 82
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

DATE: February
2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604212N

PROJECT NUMBER: H2463

PROJECT TITLE: LAMPS MK III Data Link

| Cost Categories: | Contract Method & Type | Performing Activity & Location | Total Prior Yrs Cost | FY 1999 Cost | FY 1999 Award Date | FY 2000 Cost | FY 2000 Award Date | FY 2001 Cost | FY 2001 Award Date | Cost to Complete | Total Cost | Target Value of Contract |
|-------------------------------------|------------------------|--------------------------------|----------------------|--------------|--------------------|---------------|--------------------|---------------|--------------------|------------------|---------------|--------------------------|
| DT/OT | WX | VX-1, NAWCAD Pax | 0 | 0 | N/A | 0 | N/A | 522 | N/A | 750 | 1,272 | 1,272 |
| Performance Characteristics Testing | RX | NAWCAD, Pax | 0 | 0 | N/A | 644 | Nov 99 | 870 | Nov 00 | 500 | 2,014 | 2,014 |
| Subtotal Test and Evaluation | | | 0 | 0 | | 644 | | 1,392 | | 1,250 | 3,286 | 3,286 |
| Remarks: | | | | | | | | | | | | |
| Engineering & Technical Services | RX | CSCI, VA | 0 | 611 | Jun 99 | 450 | Nov 99 | 440 | Nov 00 | 440 | 1,941 | 1,941 |
| Government Engineering Support | WX | NAWCAD, Pax | 0 | 181 | Jul 99 | 100 | Nov 99 | 260 | Nov 00 | 260 | 801 | 801 |
| Program Management & Support | RX | NAWCAD, Pax | 0 | 69 | Apr 99 | 40 | Nov 99 | 40 | Nov 00 | 40 | 189 | 189 |
| Government Engineering Support | WX | NSWC, CSS | 0 | 0 | N/A | 50 | Feb 00 | 100 | Nov 00 | 100 | 250 | 250 |
| Program Management & Support | MIPR | Ft Huachuca, AZ | 0 | 0 | N/A | 50 | Feb 00 | 0 | N/A | 0 | 50 | 50 |
| Program Management & Support | RX | Indian Head, MD | 0 | 0 | N/A | 50 | Feb 00 | 0 | N/A | 0 | 50 | 50 |
| Travel | WX | NAWCAD, Pax | 0 | 10 | Jul 99 | 20 | Nov 99 | 18 | Nov 00 | 12 | 60 | 60 |
| Subtotal Management | | | 0 | 871 | | 760 | | 858 | | 852 | 3,341 | 3,341 |
| Remarks: | | | | | | | | | | | | |
| Total Cost | | | 0 | 2,905 | | 10,795 | | 10,750 | | 25,254 | 49,704 | 49,704 |

**R-1 Item No. 80
UNCLASSIFIED**